Michigan BRFS

DIABETES PREVALENCE AND MANAGEMENT

VOLUME 1, NUMBER 2

MICHIGAN BRFSS SURVEILLANCE BRIEF

A NEWSLETTER FROM THE CHRONIC DISEASE EPIDEMIOLOGY SECTION, MDCH

Prevalence of Diabetes Among Michigan Adults

Diabetes mellitus is a chronic disease characterized by high glucose levels, resulting from defects in insulin production, insulin action, or both.[1] The Michigan Behavioral Risk Factor Surveillance System (MiBRFSS) has included a question on diabetes diagnosis annually since 1988.

The prevalence of diagnosed diabetes among Michigan adults has increased by about 50% since 1997 (Figure 1). In 2006, the prevalence of diabetes among Michigan adults was 9.0% (95% CI = 8.2-9.8), well above the national median rate of 7.5%.

Diabetes is more prevalent among older adults and those with fewer years of education. Of all Michigan adults who have diabetes, 85% are estimated to be 45 years of age or older.

There is also variation in the prevalence of diabetes by race-ethnicity in Michigan. In 2005, it was estimated that 7.6% (7.1-8.2) of non-Hispanic whites, 11.6% (9.6-13.9) of blacks, 3.8% (1.3-10.4) of Asians, 8.6% (3.9-17.7) of American Indians, and 8.5% (5.3-13.3) of Hispanics had ever been diagnosed with diabetes. Over the past ten years, the prevalence of diabetes has tended to be higher among blacks, especially black females, compared with whites of both sexes (Figure 2). Black males have had the largest increase in prevalence (7 percentage points), followed by white males with an increase of 3 percentage points.

Figure 1. Prevalence of Diabetes Among Michigan Adults, 1997-2006

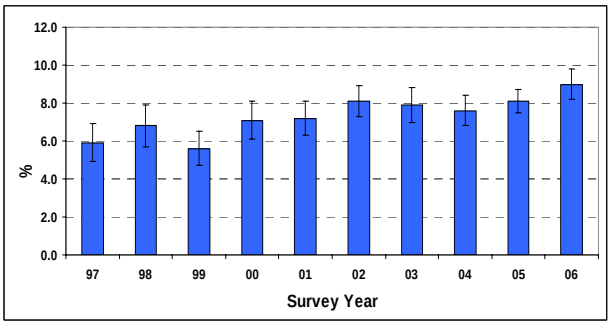
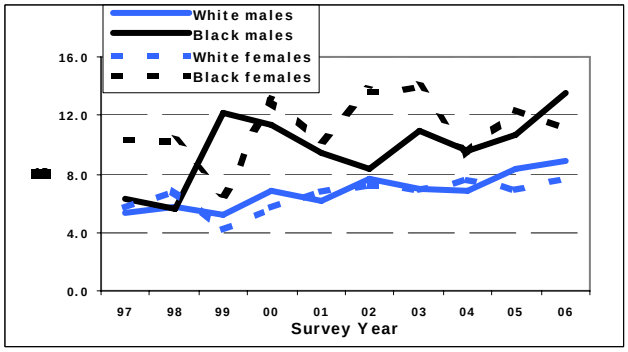


Figure 2. Prevalence of Diabetes by Sex and Race, 1997-2006



Reference

[1]CDC. National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2005. Atlanta, GA: U.S. Department of Health and Human Services, CDC, 2005.

Management of Diabetes-Related Complications

Health problems such as heart disease, stroke, kidney disease, eye damage, and foot amputations are far more prevalent in people with diabetes than in the general population. Nearly three-in-five people with diabetes (57.9 percent) are estimated to have one or more of these complications. As a nation, we spent an estimated $22.9 billion in 2006 on direct medical costs related to diabetes complications.[2]

To prevent or delay serious diabetes-related complications, it is recommended that people with diabetes receive specific preventive-care services every year.[3] These annual care services include, but are not limited to: at least two glycosylated hemoglobin (A1c) tests that determine average blood glucose levels over the previous three months; a dilated eye exam performed by an ophthalmologist or optometrist, or by digiscope; and a comprehensive foot exam by a health care professional that includes monofilament testing. Targets for population attainment of these three recommendations are part of national health objectives for 2010,[4] and the primary data source for measuring attainment of these targets at the state level is the

MiBRFSS News

- We are pleased to announce that Chris Fussman has recently joined the Chronic Disease Epidemiology Section as the MiBRFSS Epidemiologist. Please welcome Chris!
- *Health Risk Behaviors in the State of Michigan: 2006 BRFS 19th Annual Report* is now available in hard copy and electronically on our website at: http://www.michigan.gov/brfs. To receive hard copies of this report, please call 517-335-9080.
- The 2006 standard annual tables are available on our website as well as estimates by race-ethnicity and by sub-state geographic regions and local health department jurisdictions.

Diabetes Management (continued)

BRFSS Diabetes Module, a 12-question optional module that was included in the 2005 and 2006 Michigan Behavioral Risk Factor Surveys (MiBRFS).

Assessing whether these targets have been reached is usually accomplished by estimating the proportion of adults with diabetes who have received each preventive-care service individually and comparing to the target. Over 70% of Michigan adults with diabetes were estimated to have received each service individually during 2005 to 2006, which would indicate that Michigan is close to meeting or exceeding the national targets (Table 1). However, when compliance is redefined as having received all three of these preventive-care services in the past year, the picture of success dramatically changes. Fewer than four-in-ten Michigan adults with diabetes were estimated to have received all three services in the past year, similar to the national average (40%).[5] Prevalence of receipt of all three preventive-care services was low even among groups who usually have better access to health care. For example, even among those with health insurance, more than half reported that they had not receive all three preventive-care services in the past year.

Table 1. Receipt of diabetes preventive-care services, MiBRFSS 2005-2006 (n = 1,222)

	%	95%CI	HP2010 Target
Two A1c tests annually	71.9	68.4 - 75.1	65%
Dilated eye exam annually	71.2	67.8 - 74.3	75%
Foot exam by professional annually	71.2	67.9 - 74.2	75%
All 3 annually	38.4	38.2 - 47.9	--

Multivariate logistic regression was used to determine the predictors of receiving all three preventive-care services (Table 2). People with health insurance were nearly three times more likely to have received all three services annually than those without. People who had taken a self-management course in their lifetime were more than twice as likely compared with those who had not, and those who had been diagnosed with diabetes at least 20 years before were almost twice as likely compared with those diagnosed within five years.

Table 2. Multivariate* predictors of receipt of diabetes preventive-care services, MiBRFSS 2005-2006

	Odds Ratio	95%CI
Has health insurance	2.79	1.36 – 5.70
Ever taken a self-management course	2.32	1.64 – 3.29
Living with diabetes 20+ yrs (reference=0-4 yrs)	1.90	1.08 – 3.35

* Independent factors included age, sex, race, education, income, marital status, smoking status, health insurance coverage, years with diabetes, insulin use, and self-management education. $R^2 = 0.115$.

In conclusion, these results indicate that a more complete understanding of diabetes care objectives may be gained by examining receipt of care as a composite measure, as well as individual measures. Furthermore, complications from diabetes could perhaps be decreased more efficiently through programs and policies that improve receipt of multiple recommended preventive-care services, such as coordinating the provision of these services, addressing diabetes care for the uninsured, improving access and referrals to diabetes self-management classes, and increasing awareness of the need for preventive-care services among people newly diagnosed with diabetes.

References

[2]American Association of Clinical Endocrinologists. *State of Diabetes Complications in America.* 2006.

[3]American Diabetes Association. Clinical practice recommendations 2007. *Diabetes Care*. 2007; 30 (suppl 1).

[4] U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.

[5]Mukhtar Q, Pan L, Jack L, Murphy DL. Prevalence of receiving multiple preventive-care services among adults with diabetes—United States, 2002-2004. *MMWR* 2005; 54(44):1130-1133.

The Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)

The MiBRFSS comprises annual, statewide telephone surveys of Michigan adults aged 18 years and older and is part of the national BRFSS coordinated by the CDC. The annual Michigan Behavioral Risk Factor Surveys (MiBRFS) follow the CDC BRFSS protocol and use the standardized English core questionnaire that focuses on various behaviors, medical conditions, and preventive health care practices related to the leading causes of mortality, morbidity, and injury. Interviews are conducted across each calendar year. Data are weighted to adjust for the probabilities of selection and a poststratification weighting factor that adjusts for the sex, age, and race distribution of the adult Michigan population. All analyses are performed using SUDAAN to account for the complex sampling design.

Suggested citation: Corteville L, El Reda D, Anderson B, Fussman C, Rafferty A. Diabetes Prevalence and Management. *Michigan BRFSS Surveillance Brief*. Vol. 1, No. 2. Lansing, MI: Michigan Department of Community Health, Chronic Disease Epidemiology Section, December 2007.

Michigan Department of Community Health
MDCH
Jennifer M. Granholm, Governor
Janet Olszewski, Director